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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/574,723
Filing Date: April 06, 2006
Appellant(s): REINSCHKE, JOHANNES

Janet Hood
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 08 March 2011 appealing from the Office action mailed 12 October 2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 15-29

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the

subheading “WITHDRAWN REJECTIONS.” New grounds of rejection (if any) are provided under the subheading “NEW GROUNDS OF REJECTION.”

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant’s brief.

(8) Evidence Relied Upon

6,513,385	Jonsson	2-2003
4,771,622	Ginzburg	9-1988
6,427,507	Hong	8-2002
6,779,373	Barten	8-2004

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

Claims 15-18 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,513,385 to Jonsson et al (*Jonsson*).

Concerning claim 15, *Jonsson* discloses a method comprising:

determining a desired flatness of the strip via a material flow model (column 3, lines 5-8 and lines 31-34, which is a model since it models the Flatness Target in any zone which may vary);

measuring an actual flatness of the metal strip near a discharge point of the mill train (column 3, lines 7-8 and column 4, lines 58-51 as the discharge point can be either after the mill stand or after the uncoiling);

translating the measured metal strip flatness into flatness values (column 3, lines 9-19 and column 4, lines 13-17);

controlling a roll stand of the mill train via a strip shape model (column 4, lines 13-17 and 26-29) providing a relationship between intrinsic flatness ip and visible flatness vp (column 4, lines 21-24 in that the intrinsic flatness, OMFT is used as a correction factor for the visible flatness, PRFE) and that uses the desired and actual flatness values as inputs to reduce the difference between the actual flatness and the desired flatness of the metal strip (column 4, lines 13-17 and 26-29).

Concerning claim 16, *Jonsson* discloses wherein the actual flatness of the metal strip is measured at the discharge point of the mill train (column 3, lines 7-8 and column 4, lines 58-51 as the discharge point can be either after the mill stand or after the uncoiling).

Concerning claim 17, *Jonsson* discloses wherein the actual flatness is determined as a strip shape pattern (column 2, lines 18-21 as the pattern is the flatness at different points along the strip).

Concerning claim 18, *Jonsson* discloses wherein the strip shape pattern is three-dimensional (implied from column 3, lines 42-44 as the preferred flatness is a function of both width and length and is a measure of the height i.e. flatness

and is being compared to the actual flatness which must also then be a function of width and length).

Claim Rejections - 35 USC § 103

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Jonsson* in view of U.S. Patent No. 4,771,622 to Ginzburg (*Ginzburg*).

Concerning claim 19, *Jonsson* does not disclose determining the strip shape pattern along with a variable selected from the group of: wavelength, amplitude and phase offset.

Ginzburg discloses a method for operating a strip rolling mill comprising detecting the flatness of the strip (abstract) wherein a relative length of individual tracks of the metal strip is evaluated to determine the strip shape pattern (column 3, lines 49-53 and column 4, lines 28-42) along with a variable of the individual tracks consisting of: amplitude (column 4, lines 43-54).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the sensor array and flatness determination of *Ginzburg* in the method of *Jonsson* because as disclosed by *Ginzburg*, the determination of strip flatness is a well known equation in the art (column 4, line 43-44) and the array is a simple substitution of one type of measurement system for another that is well known in the art of measurements and produces predictable results and further it minimizes error (column 7, lines 39-43).

Claims 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Jonsson* in view of *Ginzburg* and further in view of U.S. Patent No. 6,427,507 to Hong et al (*Hong*).

Concerning claim 20, *Jonsson* and *Ginzburg* do not disclose using a laser to determine flatness.

Hong discloses an apparatus for measuring strip flatness (abstract) wherein a laser measuring device is used to determine the desired flatness of the metal strip (column 1, lines 19-26).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use a laser measuring device because, as disclosed by *Hong* this is frequently used in the art of automatic shape control (column 1, lines 19-21).

Concerning claim 21, while *Hong* does not disclose a multi-track laser measuring device, *Ginzburg* discloses a multi-track measuring device (column 4, lines 28-42). Thus it would have been obvious to a person of ordinary skill in the art at the time of the invention to have a multi-track laser since the modification of *Ginzburg* by *Hong* as stated in the rejection of claim 20 would have multi-track lasers to measure flatness instead of the multi-track sensors in *Ginzburg*.

Concerning claim 22, *Jonsson* discloses wherein the actual flatness of the metal strip is measured topographically (implied from column 3, lines 42-44 as the preferred flatness is a function of both width and length and is a measure

of the height i.e. flatness and is being compared to the actual flatness which must also then be a function of width and length).

Concerning claim 23, *Jonsson* discloses wherein the values for the desired flatness are translated into values for the actual flatness using the strip shape model (column 4, lines 21-24 as the Flatness Target is used as a correction factor for the actual flatness).

Concerning claim 24, *Jonsson* discloses wherein the flatness values are translated in real-time (column 3, lines 58-62 as the strip is being measured and compared to the PRFT in real time further real time translation is well known in the art).

Concerning claim 25, while *Jonsson* does not disclose, the flatness values are translated in real-time via an approximation function, such a translation is well known in the art and thus it would have been obvious to a person of ordinary skill in the art at the time of the invention to do so.

Claims 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Jonsson* in view of *Ginzburg* and *Hong* and in further view of U.S. Patent No. 6,779,373 to Barten et al (*Barten*).

Concerning claim 26, *Jonsson*, *Ginzburg* and *Hong* do not disclose applying an assumed temperature distribution in the transverse direction of the metal strip.

Barten discloses a modeling technique for controlling strip flatness (abstract) where the metal strip shape pattern based on the strip flatness is determined via the strip shape model by applying an assumed temperature distribution in the transverse direction of the metal strip (column 2, lines 52-55).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the modeling technique of *Barten* in the method of *Jonsson* because, as disclosed by *Barten*, this model can be used for varying strip rolling processes and various means of controlling the flatness (column 2, lines 46-51 and 62-63). Further this would be a simple substitution of one type of modeling for another with predicable results.

Concerning claim 27, *Hong* discloses a laser measuring device is used to determine the desired flatness of the metal strip (column 1, lines 19-26).

Concerning claim 28, while *Hong* does not disclose a multi-track laser measuring device, *Ginzburg* discloses a multi-track measuring device (column 4, lines 28-42). Thus it would have been obvious to a person of ordinary skill in the art at the time of the invention to have a multi-track laser since the modification of *Ginzburg* by *Hong* as stated in the rejection of claim 20 would have multi-track lasers to measure flatness instead of the multi-track sensors in *Ginzburg*.

Concerning claim 29, *Jonsson* discloses a flatness limit value is predefined at points to control the mill train (column 3, lines 30-35).

(10) Response to Argument

Regarding appellant's argument for claim 15, the rejection of this claim based on Gramckow was withdrawn in the office action dated 07 July 2010 and the claim was then rejected by *Jonsson* under 35 USC 102(b). As claim 15 is no longer rejected based on Gramckow, appellant's arguments regarding that piece of art will not be addressed.

Regarding the argument that *Jonsson* does not disclose a "material flow model", Appellant has provided no definition of the term "material flow model" in either the specification, claim or in his arguments. The examiner has given the term its broadest reasonable interpretation considering that a model that determines a desired flatness of the strip would read on this limitation.

Jonsson in figure 2 shows that a Mill Flatness Target is determined and then inputted into the controller 8 which is used to control the output of mill 5. While the figure is labeled Prior Art, the invention of *Jonsson* modifies this set up such that the Flatness Target may either vary over the length of the strip (column 3, lines 32-35) or where the target is based on performing one or more subsequent processes (column 3, lines 36-39). However the basic idea is still the same, creating a model of what the ideal flatness of the strip should be and all three variations teach this.

The strip shape model limitation has been read to be a "relationship between intrinsic flatness and visible flatness". The strip shape model "uses the desired and actual flatness values as inputs to reduce the difference between the

actual flatness and the desired flatness of the metal strip." Therefore, to meet this limitation, the prior art only needs to teach using the intrinsic flatness (i.e. the desired flatness, this reading is based on page 7, lines 28-30 of the specification where the intrinsic flatness is the flatness distribution over fictitious tracks and thus is merely the desired flatness) and the actual flatness (i.e. the visible flatness) to reduce the difference between them.

Jonsson discloses again in figure 2 inputting the flatness target and the mill flatness measured into a controller 8. The controller compares the values and outputs an Flatness Error which is then used to adjust the mill 5 to reduce the error (column 3, lines 12-19). Figure 3 also show the controller receiving an idealized flatness (the Post Rolling Flatness Target) and the actual/visible flatness (Post Rolling Flatness) and using those values to reduce the difference between the ideal and actual flatness (column 3, line 65 to column 4, line 11).

Appellant's arguments that *Jonsson* does not read on claim 15 because the errors are reduced to zero is not persuasive since the purpose of the strip shape model is also to reduce the difference between the actual flatness and ideal flatness to a number close to zero, i.e. to get the actual flatness as close to the ideal flatness as possible. This is the same purpose as what *Jonsson* teaches and thus *Jonsson* reads on this claim.

Finally, appellant argues that *Jonsson*'s strip shape model might be used in a feedback control loop. This argument is not persuasive since the claim language does not preclude having a feedback control loop. In fact the only

difference between a standard feedback control loop and the present claim is that a feedback control loop has an additional step of measuring the next strip sent through the mill after the mill has been adjusted in an attempt to decrease the strip flatness error in order to further decrease the strip flatness error. Thus a feedback control loop would read on the claim as written.

Regarding appellant's argument for claim 18, *Jonsson* inherently discloses the strip shape pattern, which is the measurement of the actual flatness, is three dimensional. *Jonsson*'s PRFT or Post Rolling Flatness Target, which corresponds to the ideal flatness limitation, is a function of both width and length (column 3, lines 43-45). As strip flatness is a measurement of height, the desired flatness is a model of the strip in three dimension (height, width and length). Since the desired flatness is compared to the actual flatness, the actual flatness inherently comprises the same measurements as the desired flatness since otherwise the additional data would not be used, defeating the purpose of having height measurements based on the length and width of the strip. Therefore since the desired flatness values are three dimensional and these values are compared with the actual flatness, the actual flatness or strip shape pattern disclosed by *Jonsson* must inherently also be three dimensional.

Regarding appellant's argument for claim 23, appellant again argues that since *Jonsson* does not disclose a strip shape model it does not read on this claim. As discussed in the arguments for claim 15, *Jonsson* does disclose a strip shape model.

Regarding appellant's argument for claim 24, appellant again argues that since *Jonsson* does not disclose a strip shape model it does not read on this claim. As discussed in the arguments for claim 15, *Jonsson* does disclose a strip shape model. Additionally, *Jonsson* discloses in figures 2 and 3 that the values are measured in real time as the flatness of the strip is measured as the strip leaves the mill, i.e. in real time. That value is then compared to the ideal flatness and the mill is adjusted accordingly (column 3, lines 58-62).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Matthew G. Katcoff/

Examiner, Art Unit 3725

05/11/2011

Conferees:

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